PRS3

COMPARATIVE EFFECTIVENESS OF IPRATROPIUM IN COPD PATIENTS

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OBJECTIVES: Recent questions have been raised about ipratropium safety in chronic obstructive pulmonary disease (COPD). However, these studies have failed to examine potential benefits of ipratropium. Our objective was to evaluate the comparative effectiveness of ipratropium versus other COPD medications. **METHODS:** We conducted a cohort study in veterans diagnosed with COPD between October 2002 and September 2003. Patients were followed up to 2.5 years for all-cause mortality, COPD exacerbations and COPD-related hospitalizations. Time-varying medication exposure was determined for inhaled corticosteroids (ICS), ipratropium (IPRA), long-acting beta-agonists (LABA), and theophylline (THEO) during follow-up. Risk indices were used to divide the cohort into low, moderate and high risk groups. Cox proportional hazards regressions were used to examine associations between medication regimen exposure and events, stratified by risk index and adjusted for propensity to use ipratropium. **RESULTS:** From 108,426 patients, there were 16,539 deaths, 42,109 with an exacerbation and 14,828 with a COPD-related hospitalization. Compared with LABA, there was a significant increase in the mortality risk associated with IPRA in the moderate (HR = 1.54 [95% CI 1.19–2.01] and high risk (HR = 1.30 ([1.09–1.55]) groups. For exacerbations, IPRA was associated with an increased risk in the low risk group (HR = 1.64 [1.40–1.92]), but not in either the moderate (HR = 0.97 [0.85–1.09]) or high risk group (HR = 0.94 [0.84–1.05]). **CONCLUSIONS:** We found an increased risk of mortality associated with ipratropium that varied by baseline risk of event. The findings elevate concerns about potential harms associated with ipratropium in COPD that do not appear to be offset by reduction in COPD events.

PRS4

DRUG UTILIZATION AND SPENDING TRENDS FOR ANTI-ASTHMATIC AGENTS IN US MEDICAID PROGRAM FROM 1991 TO 2007

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OBJECTIVES: Asthma is a common chronic respiratory disease with an increasing prevalence in industrialized countries. The purpose of this study was to describe the drug utilization and spending trends for anti-asthmatic agents in the U.S. Medicaid program. **METHODS:** A retrospective and descriptive study was conducted quarterly prescriptions and reimbursement amount for each study drug in Medicaid Pharmacy claims files which extracted from the Centers for Medicare & Medicaid Services from 1991 quarter 1 to 2007 quarter 3. The reimbursement per-prescription was calculated each quarter as a proxy of drug price. The study drugs included Short-acting beta agonist (SABA), Long-acting beta agonist (LABA), Inhaled Corticosteroid (ICS) and Combination medication with LABA and ICS. **RESULTS:** The total number of prescriptions per quarter for asthma medications increased from 303,224 in 1991 to 1,091,201 in 2005, and dropped to 302,157 in 2007. From 1991 to 2005, the total number of prescriptions per quarter for SABA decreased from 278,286 to 37,965, LABA increased from lower than 1,000 to 43,106, ICS increased from 24,938 to 85,846 and LABA plus ICS increased from 61,477 to 924,284. The total reimbursement per quarter of asthma medications increased from $23 million in 1991 to $280 million in 2005 and dropped to $193 million in 2007. The per prescription price leaders among study drugs in 2007 are: Xopenex® in SABA ($150 per prescription), Serevent® in LABA ($125 per prescription), Asmanex® in ICS ($370 per prescription) and Advair® in LABA plus ICS ($184 per prescription). **CONCLUSIONS:** Total utilization and spending of asthma medications increased rapidly before 2005 which might primarily be due to 2002 asthma treatment guideline regarding to drug use recommendations. New innovative combination drugs with LABA plus ICS had relatively higher per-prescription price. A significant decreasing of utilization and spending after 2005 might be due to the implementation of Medicare Part D.

PRS5

RELATIONSHIP BETWEEN EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) AND DURATION OF CONTROLLER THERAPY AMONG A COMMERCIALLY INSURED POPULATION IN THE UNITED STATES

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OBJECTIVES: To assess the relationship between COPD exacerbations and controller therapy duration. **METHODS:** Data from 2 large US proprietary health claims databases were pooled to construct a prevalent cohort of patients with COPD and an index date defined as first controller therapy fill from January 1, 2004–March 31/2008. Inclusion criteria were COPD diagnosis (ICD-9CM 491, 492, or 496), >12 months of pre- and post-index date enrollment, >1 pharmacy claim, age >40 years, and no lung cancer. Controller therapy included inhaled corticosteroids, long-acting β-agonists, fluticasone/salmeterol combination, or tiotropium bromide. Logistic regression models assessed the risk of exacerbation-related events (hospitalization, emergency department (ED) visits, oral corticosteroid (OCS) or antibiotic prescriptions) associated with claim-identified therapy duration, controlling for age, sex, prior health care utilization, and comorbidities. **RESULTS:** Of the 45,657 patients (45%, men; mean age, 60 years), 11.28% had a hospitalization; 2.70% an ED visit; 42.12%, an OCS prescription; and 74.99% an antibiotic prescription. The annual rate of events/patient included 0.48 hospitalizations, 0.04 ED visits, 2.43 antibiotic prescriptions, and 1.18 OCS prescriptions. Controller therapy duration of claims for the cohort included 0–90 days in 51%, 91–180 days in 17%, 181–270 days in 11.5%, and 271–365 days in 20.4%. Compared with patients whose therapy lasted 1–90 days, the exacerbation event risk was no different from that for those with 91–180 days (odds ratio [OR], 0.98; 95%CI, 0.92,1.05), 9% higher for those with 181–270 days (OR, 1.09; 95%CI, 1.01,1.18), and 10% higher for those with 271–365 days (OR, 1.10; 95%CI 1.03,1.17). Similar trends were observed for each exacerbation event. **CONCLUSIONS:** The inverse relationship between controller therapy duration and COPD exacerbations, while potentially confounded by disease severity, suggests reducing symptoms earlier may improve controller therapy duration and reduce exacerbation risk.

PRS6

ESTIMATION OF QUALITY-ADJUSTED LIFE EXPECTANCY AND LOSS OF UTILITY IN PATIENTS UNDER PROLONGED MECHANICAL VENTILATION

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OBJECTIVES: The purpose of this study was to integrate survival function with utility of quality of life to estimate the quality-adjusted life expectancy (QALE) and expected loss of QALE for patients under prolonged mechanical ventilation (PMV). **METHODS:** A total of 633 patients fulfilled the definition of PMV or under such a care for more than 21 days, of which medical records were abstracted and linked to the National Death Registry database of Taiwan to obtain the survival function. Among them we collected 71 subjects and assessed their quality of life by Taiwan version of EQ-5D. The survival function for an age and gender matched reference population was generated using the Monte Carlo method from the life table of the general population of Taiwan. Lifetime survival of the PMV patients were obtained using linear extrapolation of a logit-transformed curve of the survival ratio between the PMV and reference populations. The survival probability for each time point was adjusted with the mean utility to obtain the QALE. **RESULTS:** One year survival rate were 33%. The life expectancy and loss of life expectancy were 32.99 months and 101.89 months in patients with PMV, respectively. The QALE and loss of QALE in patients with slightly clear consciousness were 12.37 quality-adjusted life months (QALM) and 85.39 QALM, respectively. The sensitivity analysis of applying measurements from two proxies, namely, family care-givers and nurses, did not show a statistically significance and the QALE in total patients with PMV were 9.47 and 8.54 QALM, respectively. **CONCLUSIONS:** Overall QALE of patients with PMV was poor and the loss of utility is big. We shall encourage per-protocol weaning procedure in the intensive care unit and early signature for no resuscitation (DNR) when the patient's consciousness was clear.

RESPIRATORY-RELATED DISORDERS – Cost Studies

PRS7

IMPACT OF STATIN THERAPY ON ASTHMA-RELATED EVENT COSTS IN ADULT ASTHMA PATIENTS

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OBJECTIVES: Statins exert anti-inflammatory effects that may have a positive impact on asthma. This study explored the association of statin exposure with asthma-related events and costs. **METHODS:** This was a retrospective analysis of the 12+ million person Medco National Integrated Database. Adult patients receiving inhaled corticosteroid (ICS) therapy between January 2006 to December 2006, and ≥1 hospitalization/emergency room (ER) visit for asthma (ICD9 493.XX) in the previous 12 months from first-occurring ICS prescription were selected. Patients were then stratified by statin exposure, and were followed for 1 year to assess the risk of the primary event endpoint of asthma-related hospitalization/ER visit (ICD9 493.XX). Event costs per patient-year of follow-up (2009 $US) were calculated using age-specific Healthcare Cost and Utilization Project (HCUP) data for ICD9 493.XX-related 2006 hospitalization and 2005 ER events inflated by 5%/year. Costs were derived from HCUP charges applying an actual cost:charge ratio of 0.4 for hospitalization, and an estimated ratio of 0.6 for ER visits. **RESULTS:** A total of 6574 patients were studied (4471 statin-unexposed; 2103 statin-exposed). Overall mean ± SD age was 61 ± 16 years, 29% were male, and 19% had ≥2 asthma hospitalization/ER events in the previous 12 months. Asthma therapy included beta agonists (short-acting 63%; long-acting 37%) and leukotriene modifiers (38%). Hospitalization/ER event incidence was 29.4% in statin-unexposed patients versus 20.5% in statin-exposed patients [odds ratio 0.67 (95% CI 0.58–0.76; $p < 0.0001$) adjusted for age, gender, previous asthma events and asthma therapy]. Hospitalization/ER event costs per pt-year were $1354 in statin-treated patients and $1123 in untreated patients (–$230; –17%). Statin therapy reduced both hospitalization (–$252 per pt-yr; –18%) and ER (–$63 per pt-yr;